

# CONGESTION MANAGEMENT SYSTEM

## TRANSPORTATION ASSET MANAGEMENT

### *Congestion Management System*

As one of six components of the Transportation Management System (TMS), the Congestion Management System (CMS) is the decision-support tool that provides an integrated approach to planning by assessing information on all asset inventories, condition and operational performance. Designed to assist decision-makers in choosing cost-effective strategies and actions, CMS is a systematic approach to improving the efficiency of our transportation assets.

### *What is Included in CMS?*

CMS is the instrument for data management, analysis and deficiency identification for more than 9,700 route miles of state highway assets. CMS uses historic, current and forecasted attributes to support identification of current and future congested roadways. It also incorporates travel demand forecasting capabilities for 14 urban and numerous rural areas throughout Michigan to assess transportation system performance and to identify areas with unacceptable performance. Performance measures with localized thresholds allow CMS to address movement of people, vehicles and goods based on goals and objectives of specific areas.



### *How is CMS Organized?*

CMS is not simply a data management tool. It is a tool to facilitate an improved planning and programming process. As part of the overall integrated TMS, it provides flexibility in the way the situation is viewed. Users have the ability to see accessibility and mobility condition in one of four ways:

- Area/Route Level Analysis
- Socioeconomic/demographic Summaries
- Performance Measure Tracking
- Trend Analysis.

Geographical area displays allow a full range of detail to be viewed, from an entire study area to a specific segment of a studied route. CMS also shows summary information for specific system slices such as National Highway System (NHS), National Functional Class or Priority Commercial Network roads.

Within these areas, High Level Performance Indicators provide a basis for trend analysis and tracking of system performance. Users can identify current and future congested roadway deficiencies based on Volume/Capacity measures (Level of Service or LOS), Travel Rate and Delay Rate. Summary LOS distribution information for roadway and operational characteristics is available. At a high level,

Location Builder allows identification of congestion-related transportation needs using a gross level costing mechanism. Performance thresholds established by, and specific to a locale, allow CMS to accurately address movements of people and goods. Socioeconomic and demographic information can also be viewed down to the Statewide 2300 Traffic Analysis Zone level.

*US-131 S-Curve in Grand Rapids*

# CONGESTION



## **Who is Responsible for CMS?**

Predominate responsibility for CMS resides with the Michigan Department of Transportation's (MDOT) Bureau of Transportation Planning. The bureau works with government agency partners, including transit providers, to assure efficient operation of the state's transportation network. CMS is also being integrated into the metropolitan planning organization planning process.

## **Who are CMS Customers?**

Internally, CMS supports MDOT's asset management decisions. Staff and government partners can no longer build additional roads to solve our problems, congestion included. CMS is one of the planning tools used to optimize mobility and access at the minimum cost. . . and does so as a part of TMS in establishing needs.

## **Supporting Data**

Analysis with CMS gathers much of the information about a route, corridor, system and/or area. However, research from other sources is also collected in terms of access control policies/programs, land use, traffic impact studies, etc. CMS, and other parts of the TMS, can then help identify alternatives, compare the performance of alternative solutions, establish gross level costs and establish gross needs. Performance standards help establish needs.

## **Strategic Plans**

CMS reflects the *Michigan Transportation Policy, MDOT Business Plan and State Long-Range Plan (SLRP)*. Through the congestion management process, the user may identify congestion-related problems, identify causes, identify possible solutions, develop and evaluate alternative strategies and solutions, identify preferred strategy and/or solutions and monitor effectiveness of choices over time.

CMS provides access to current system level conditions and identification of current and future congested roadways. Through use of system descriptors and performance measures, MDOT will monitor and evaluate how we are meeting customers needs, as well as how MDOT is doing in attaining SLRP goals and objectives.

## **Performance Standards & Needs**

CMS was designed to monitor and analyze the magnitude of congestion on a multi-modal transportation system, to plan actions appropriate to the scope of a problem and to implement projects that alleviate congestion and enhance the performance of the transportation system.

In CMS, performance measures allow us to identify sources of recurring congestion, such as bottlenecks and excess demand. It also lets us



*Managing congestion is a critical component of our construction efforts.*

proactively identify areas prone to congestion with efficiency-based measures, forecasted land use and socioeconomic information.

## **Monitoring & Reporting**

As part of an integrated system, CMS users are able to view summary information and respond to customer inquiries with regards to current system level conditions and future conditions. CMS allows for a more efficient review of comparisons of alternatives. Currently, historical and forecast data for highway, NHS and other modeled roadways can be accessed and displayed. Some socioeconomic data can be viewed over time and at various levels of aggregation. Basic performance measures are in place for deficiency identification. Users have the option of using established thresholds, or adjusting them for unique situations.

The *CMS User Manual* is also on the Web page. For those with the application, it provides a how-to guide. For everyone, it provides a guide to the congestion management process.

**For Further Information -**  
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